

APPENDIX

THIRD SCHEDULED

ENVIRONMENTAL QUALITY ACT 1974 ENVIRONMENTAL QUALITY (SEWAGE INDUSTRIAL EFFLUENTS) REGULATIONS 1979

*Regulation 8(1), 8(2), 8(3)
Parameter Limits of Effluent Standard A and B*

Parameters	Units	A	B
Temperature	°C	40	40
pH Value	-	6.0 - 9.0	5.5 - 9.0
BOD5 at 20 °C	mg/l	20	50
COD	mg/l	50	100
Suspended solids	mg/l	50	100
Mercury	mg/l	0.005	0.05
Cadmium	mg/l	0.01	0.02
Chromium,(VI)	mg/l	0.05	0.05
Arsenic	mg/l	0.05	0.10
Cyanide	mg/l	0.05	0.10
Lead	mg/l	0.01	0.50
Chromium, (III)	mg/l	0.20	1.00
Copper	mg/l	0.20	1.00
Manganese	mg/l	0.20	1.00
Nickel	mg/l	0.20	1.00
Tin	mg/l	0.20	1.00
Zinc	mg/l	0.20	1.00
Boron	mg/l	1.00	4.00
Iron	mg/l	1.00	5.00
Phenol	mg/l	0.001	1.00
Free Chloride	mg/l	1.00	2.00
Sulphide	mg/l	0.50	0.50
Oil and Grease	mg/l	Not detectable	10.00

Nomenclature

q_e = Amount of Ni(II) adsorbed at equilibrium (m.mol/g)

q = Amount of Ni(II) adsorbed at any time 't' (m.mol/g)

K_1 & K_2 = Rate constant for adsorption (min^{-1})

K_c , K_{c_1} & K_{c_2} = Equilibrium constant

t = time (min.)

K_{id} = Rate Constants of intraparticle transport, $\text{m.mol}/(\text{min.})^{1/2}$

C_i = Initial concentration of Ni(II) in water (m.mol/L)

C = Concentration of Ni(II) in water at time 't' (m.mol/L)

B & A = Empirical Constants dependant on C_i

C_e = Equilibrium Concentration of adsorbate in solution after adsorption,
(m.mol/L)

Q_0 = Langmuir Constant related to the adsorption capacity (m.mol/g)

b = Langmuir Constant related to the energy of adsorption, (L/m.mol)

k, n = Empirical Constant.

b' = Constant

ΔG^0 = Free energy change for adsorption of Ni(II) , (Kcal/mol)

ΔH^0 = Enthalpy change for adsorption of Ni(II) on wood ash (Kcal/mol)

ΔS^0 = Entropy change for adsorption of Ni(II) on ash (Cal/mol)